MFRLRSWASSTTGSRYGSAFCGSPTLAWCVCVPVCYGESRILRVKVVSG IDLAKKDIFGASDPYVKLSLYVADENRELALVQTKTIKKTLNPKWNEEF YFFVNPSNHRLLFEVFDENRLTRDDFLGQVDVPLSHLPTEDPTMERPYT ^^^^^^^ FKDFLLRPRSHKSRVKGFLRLKMAYMPKNGGQDEENSDQRDDMEHGWEV VDSNDSASOHOEELPPPPLPPGWEEKVDNLGRTYYVNHNNRTTQWHRPS ******** LMDVSSESDNNIRQINQEAAHRRFRSRRHISEDLEPEPSEGGDVPEPWE TISEEVNIAGDSLGVVLPPPPASPGSRTSPQELSEELSRRLQITPDSNG EQFSSLIQREPSSRLRSCSVTDAVAEQGHLPPPSVAYVHTTPGLPSGWE ERKDAKGRTYYVNHNNRTTTWTRPIMQLAEDGASGSATNSNNHLIEPQI ****** RRPRSLSSPTVTLXAPLEGAKDSPVRRAVKDTLSNPQSPQPSPYNSPKP QHKVTQSFLPPGWEMRIAPNGRPFFIDHNTKTTTWEDPRLKFPVHMRSK TSLNPNDLGPLPPGWEERIHLDGRTFYIDHNSKITQWEDPRLQNPAITG ******* PAVPYSREFKQKYDYFRKKLKKPADIPNRFEMKLHRNNIFEESYRRIMS VKRPDVLKARLWIEFESEKGLDYGGVAREWFFLLSKEMFNPYYGLFEYS ATDNYTLOINPNSGLCNEDHLSYFTFIGRVAGLAVFHGKLLDGFFIRPF YKMMLGKQITLNDMESVDSEYYNSLKWILENDPTELDLMFCIDEENFGQ TYQVDLKPNGSEIMVTNENKREYIDLVIQWRFVNRVQKQMNAFLEGFTE LLPIDLIKIFDENELELLMCGLGDVDVNDWRQHSI<u>YKNGYCPNHPVIOW</u> FWKAVLLMDAEKRIRLLOFVTGTSRVPMNGFAELYGSNGPOLFTIEOWG SPEKLPRAHTCFNRLDLPPYETFEDLREKLLMAVENAOGFEGVD.

Figure 2a

11 13 13 13 14 14 14 14 14 14 14 14 14 14 14 14 14
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Figure 2b

A P N G R 2008P-1	L G P L P 2603P-1	T G P A V 26934	VLEDS P46934	W F F L I P46934 W P F L L ZGGBP-1	LSYFK P:6934	H D M E S 2008P-1	QHELK P46934 QVDLK ZGGBP-	FKEGP P46934	T K Y K N P46934 S I Y K N ZGGBP-	R V P M N P46934 R V P M N ZGGBP-	D L P P Y P46934 D L P P Y 2GGBP-	P46934
L P N G W E V R H	X T S L D T S K T X T S L X - Y D X S L D X S L X T S	DPRLENVAI DPRLONPAI	F E M K L H R A T	LDYGGVARELDYGGVARE	N S G L C N E D H N S G L C N E D H	лт гожол ж м то хол ж	DEELPGOTH DEENPGOTY	N R I O K O M A A A N V O K O M M A	V D V N D W R E H	1 1 0 7 V 7 G 7 S 7 C 7 C 7 S 7 C 7 S 7 S 7 S 7 S 7 S	R A H T C F N R L R A H T C F N R L	
OHXVTOSF	K I P A H L R G K P P V H M R S	N I K R T O W E	X O N D I P N X	IEFDGEKG IEFESEKG	N Y T L Q I N P N Y T L Q I N P	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	ELDLMF11	L V I O W R P V	T L K C G L G D	M D S E K R I R A D A E K R I R	W G T P E K L P	OGFDGV-D
P S P Y N S P K P	TTTWEDPRL	DGRIFYINH DGRTFYIDH	YEFFRKL X Y D Y F R K K L K	A D F L K A R L W	GLFEYSATD	V Y H G K L L D G	K I L E X O X E I L E X A A A A A A A A A A A A A A A A A A	NKNKKEYIY NENKREYID	X I P D E N E L E X I P D E N E L E	O W F W K A V L H	GPQSFTVEQ GPQLPTIEQ	LOMAIENTO
- 1	T N H O I A A C X L N H O I A A C X L N H O I A C X L X L X L X L X L X L X L X L X L X	G W E E R I H L I	Y S R D Y K R K Y Y S R E F K O K Y	R R I M G V K R I	X E M E N P Y Y	I G R V A G M A I	T S N X X B S C S E X X N S L	G G S E I V V T N G S E I M V T N	1 1 0 1 d 7 7 3	YSANHOVI YCPNHPVI	F A E L Y G S N P A E L Y G S N	S P E L W D K
435 - 473 T	464 P 513 P	504 P	544 P 592 P	584 Y 632 Y	624 S 672 S	664 F 712 F	704 V 752 V	744 N 792 P	784 P	824 G 872 G	964 G	904 E

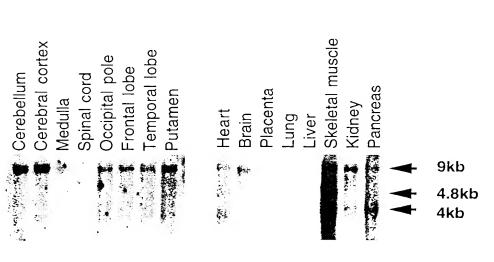


Fig	gu	re	4a

ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1
ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1
Mouse	Mouse	Mouse	Mouse	Mouse	Mouse	Mouse	Mouse	Mouse	Mouse
Human	Human	Human	Human	Human	Human	Kuman	Human	Human	Human
1 CAGAGAAAGGTCTTGACTAGGGGGGGGGGGGGGGGGGGG	25 GTTCTTCTTACTGTCCAAAGAGATGTTTAACCCCTACTAT 41 GTTCTTACTGTCCAAAGAGATGTTCAACCCCTACTAG	65 GGCCTCTTCGAGTACTCTGCCACGGACAACTACACAGTTTC 81 GGCCTCTTGAGTACTCTGCCACGGACAACTACACCCTTC	105 AGATCAATCCCAACTCAGGCCTCTGTAATGAAGACCATTT 121 AGATCAAGTTCAGGCCTCTGTAATGAGGATCATTT	145 СТССТАТТ САССТТСАТТ СААВСАВСТ ССТ С С С С С С С С С С С С С С С С	185 GTGTTTCATGGGAAACTCTTAGATGGAJTTCATTCGAC 201 GTATTTCATGGGAAGCTCTTAGATGGTTTCTTCATTAGAC	225 CATTCTACAAGATGATGCTGGGGAAGCAGATAACGCTGAA 241 CATTTACAAGATGATGTTGGGAAAGCAGATAACCCTGAA	265 CGACATGGAGTCCGTGGACAGCGAGTACTACAACTCTTTG 281 TGACATGGAATGGGATGAATATACAACTCTTTG	305 A A G T G G A T C T T A G A A A A C G A C C C C A C G G A A C T G A C C T C A 321 A A A T G G A G A A T G A C C C T A C T G A G C T C C A C C T A C T G A G A C C T C A	345 TGTTCTGCATAGACGAWGAGACTTTGGGCAGACATACCA 361 TGTTCTGCATAGAAGAAAAACTTTGGACAGACATATCA

Figure 4b

2638P-1	ZGGBP-1	2638P-1	ZG38P-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1
2638P-1	ZGGBP-1	2638P-1	ZG38P-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1	ZGGBP-1
Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human	Mouse Human
385 A G T G G A T C T G A A G C C C A A C G G G T C A G A A T A A T G G T T A A C C C A A T G G G T C A G A A A A A T G G T C A C A A A A A A A A G C C C A A T G G G T C A G A A A T A A T G G T C A C A	425 AATGAGAACAAACGAGAATACATTGACTTAGTCATCCAGT	465 GGAGATTTGTGAACAGGTCCAGAAGCAAATGCCTT	SOS CTTGGAGGATTTACAGAACTTCTTCCAATCGACTTGATT	545 AAATTTTGATGAAAATGAGCTGGAGTTGCTGATGCG	585 GCCTTGGTGACGTGAACGACTGACTGGAGACAGCACTC	625 TATTACAAGAACGGCTACTGCCCCAACCACCTGTCATC	665 CAGTGGTTCTGGAAGGCCGTGCTCCTGATGGATGCTGAGA	705 А G C G C A T C C G G T T A C T A C A G T T T G T C A G G C A C C T C C A G	745 AGTACCCATGGATTTGCCGAACTCTATGGTTCCAAT	785 GGTCCTCAGCTGTTTACAATAGAGCAATGGGGCAGTCC-G	824 AAAACTACC-AGAGCTC-TACATGCTT-AATCGC
	441 AATGAAAACAAAAGGGAATATATCGACTTAGTCATCCAGT	481 GGAGATTTGTGAACAGGGTCCAGAAGCAGATGAACGCCTT	S21 CTTGGAGGGATTCACAGAACTACTTCCTATTGATT	561 AAATTTTTGATGAAAATGAGCTGGAGTTGCTGCG	601 GCCTCGGTGATGTGAATGACTGGAGACAGCATTC	641 TATTACAAGAACGCTACTGCCCAAACCACCCGTCATT	681 CAGTGGTAAGGCTGTGCTACTCATGGACGCCGAAA	721 А G C G T A C C G G T T A C T G C A G T T T G T C A C A G G G A C A T C G C G	761 AGTACCTATGAATGGATTTGCCGAACTTTATGGTTCCAAT	801 GGTCCTCAGCTGTTTACAATAGAGCAATGGGGCAGTCCTG	841 AGAAACTGCCAGAGCTCACACATGCTTTAATCGCCTTG

Figure 5a

44	CGG
16	GTCGCCAGGACTGCGTTCGCTGCGCTCATAGGCGGCG ZGGP1.seq
31	
51	GGTCGTCCTCGACGCGGTTGCCCTCCTCGTCCTGTTCCAG
53 161	GACGAGGCCAGGGAGGGTAGGGAGGGTAGGTGTGGGAGGGA
68 201	CCCGACACCTCGACAATCGGCGATCGTCGAAGTGCTTGG ZGGBP1.seq
74 241	AAAAGCGCTCCAGGTCACCAAGGTAGAT Pub-3.seq
90	TTCCAGCAGCGCTAG Pub-3.seq TTTCAGGTCGGGGGGGCAACAGGGTCTTGAGGTAG ZGGBD1.seq
105	TCCAGCTGAACACTTTCCAGCCT Pub-3.seq
128 361	0 0
141	
145 441	TACGGAGAGTCCCGTATTCTCAGAGTAAAGTAT Pub-3.seq

Figure 5b

157	GAATWGATCTCGCCAAAAAGGACATCTTTGGAGCCAGTGA Pub-3.seq
162	TCCGTATGTGAAACTTTCATTGTACGTAGCGGATGAGAAT Pub-3.seq TCCGTATGTGAAACTTTCATTGTACGTAGCGGATGAGAAT ZGGBP1.seq
202	AGAGAACTTGCTTTGGTCCAGACAAAACAATTAAAAGA Pub-3.seq AGAGAACTTGCTTTGGTCCAGACAAAACAATTAAAAAGA ZGGBP1.seq
242	CACTGAACCCAAAATGGAATGAAGAATTTTATTTCAGGGT Pub-3.seq
282	AAACCCATCTAATCACAGACTCCTATTTGAAGTATTTGAC Pub-3.seq AAACCCATCTAATCACAGACTCCTATTTGAAGTATTTGAC ZGGBP1.seq
322	GAAAATAGACTGACACGAGACGGCTTCCTGGGCCAGGTGG Pub-3.seq GAAAATAGACTGACACGAGACGACTTCCTGGGCCAGGTGG ZGGBP1.seq
362	ACGTGCCCCTTAGTCACCTTCCGACAGAAGATCCAACCAT Pub-3.seg
402	GGAGCGACCCTATACATTTAAGGACTTTCTCCTCAGACCA Pub-3.seq GGAGCGACCCTATACATTTAAGGACTTTCTCCTCAGACCA ZGGBP1.seq
442	AGAAGTCATAAGTCTCGAGTTAAGGGATTTTTGCGATTGA Pub-3.seq AGAAGTCATAAGTCTCGAGTTAAGGGATTTTTGCGATTGA ZGGBP1.seq
482	AAATGGCCTATATGCCAAAAATGGAGGTCAAGATGAAGA Pub-3.seq AAATGGCCTATATGCCAAAAATGGAGGTCAAGATGAAGA ZGGBP1.seq
522 881	AAACAGTGACCAGAGGATGACATGGAGCATGGATGGGAA Pub-3.seq AAACAGTGACCAGAGGGATGACATGGAGCATGGATGGGAA ZGGBP1.seq
562 921	GTTGTTGACTCAAATGACTCGGCTTCTCAGCACCAAGAG Pub-3.seq GTTGTTGACTCAAATGACTCGGCTTCTCAGCACCAAGAG ZGGBP1.seq

Figure 5c

AAA ZGGBP1.seq	A A C Pub-3.seq A A C ZGGBP1.seq	A C G Pub-3.seq A C G ZGGBP1.seq	C C A ZGGBP1.seq	ATC Pub-3.seq ATC ZGGBP1.seq	ATG Pub-3.seq ATG ZGGBP1.seq	TAT Pub-3.seq TAT ZGGBP1.seq	C C G Pub-3.seq C C G ZGGBP1.seq	CAG Pub-3.seq CAG ZGGBP1.seq	CAA Pub-3.seq CAA ZGGBP1.seq	TCC Pub-3.seq TCC ZGGBP1.seq	CAG Pub-3.seq	A C A 2GGBF. seq
G G T G G G A A G A G G T G G G A A G A	T G T C A A C C A C T G T C A A C C A C	A G C C T G A T G G A G C C T G A T G G	G A C A G A T C A A G A C A G A T C A A	C C G C A G G C A C C C G C A G G C A C	G A G G C G G G G G G G G G G G G G G G	A G G A A G T G A A A G G A A G T G A A	G C C C C A C C A G C C C C A C C A	C A G G A G C T G T C A G G A G C T G T	C T C C A G A C T C C T C C A G A C T C	A A G A G A A C C C A A G A G A A C C C	G A C G C A G T T G (G G C C T A T G T G G C C T A T G T
C T G C C T C C C G	GAACTTACTA GAACTTACTA	G C A C A G A C C A G C A C A G A C C A	A A T A A C A T C A A A T A A C A T C A	G C T T C C G C T C G C T T C C G C T C	C G A G C C C T C G	CCATTTCAG	TCTGGCTCT TGTGGTTTT	A C C A G C C C T A C C A G C C C T	T T C A G A T C A T T C A G A T C A	T T T G A T T C A T T T G A T T C A	A G T G T C A C C	C G C C A T C A G T C G C C A T C A G T
CTCCTCCT CTCCTCCT	A T T T A G G C C (CACTCAGTG	GAGTCGGACA	C A C A C C G G C C	CTTGGAGCCC CTTGGAGCC	CCTTGGGAGA	A CT CT CT C G G	A G G A T C T C G G A G G A T C T C G G	A G C A G A A G G C A G C A G A A G G C	AGTTCAGCTC AGTTCAGCTC	SAGGTCATGC SAGGTCATGC	ATCTACCAC ATCTACCAC
AACTTCCAAACTTCC	A G T G G A C A	AACCGGAC AACCGGAC	TGTCCTCG.	G G A G G C A G G G A G G C A G	A G C G A A G A A G C G A A G A	T C C C C G A G	CGCTGGAG	G T C T C C C C	AGGAACTA AGGAACTA	T G G G G A A C A	TCAAGGTTG TCAAGGTTG	AACAGGGCC
602	642 1001	682	722 1081	762 1121	802	842	882	922 1281	962	1002	1042	1082

Figure 5d

Pub-3.seg ZGGBP1.seg	Pub-3.seq ZGGBP1.seq	Pub-3.seq ZGGBP1.seq	Pub-3.seq ZGGBP1.seq	Pub-3.seq ZGGBP1.seq	Pub-3.seq ZGGBP1.seq	Pub-3.seq ZGGBP1.seg	Pub-3.seq ZGGBP1.seq	Pub-3.seq ZGGBP1.seq	Pub-3.seg ZGGBP1.seg	Pub-3.seq ZGGBP1.seq
ACGCCGGGTCTGCCTTCAGGCTGGGAAGAAAAAA Pub-	CTAAGGGGGCACATACTATGTCAATCATAACAATC CTAAGGGGGGCACATACTATGTCAATCATAACAATC	CACAACTTGGACTCGACCTATCATGCAGCTTGCAGA Pub-3	GGTGCGTCCGGATCAGCCACAAACAGTAACAACCAT Pub-3 GGTGCGTCCGGATCAGCCACAAACAGTAACAACCAT ZGGBI	TCGAGCCTCAGATCCGCCGGCCTCGTAGCCTCAGCT Pub-3	AACAGTAACTTTATCTGCCCGGCTGGAGGGTGCCAA Pub-3 AACAGTAACTTTATYTGCCCCGCTGGAGGGTGCCAA ZGGBF	TCACCCGTACGTCGGGCTGTGAAAGACACCCTTTCC Pub-3 TCACCCGTACGTCGGGCTGTGAAAGACACCCTTTCC ZGGBF	CACAGTCCCCACAGCCATCACCTTACAACTCCCCCA Pub-3 CACAGTCCCCACAGCCATCACCTTACAACTCCCCCA ZGGBP	ACAACACAAAGTCACACAGAGCTTCTTGCCACCGG Pub-3 ACAACACAAGTCACAGAGCTTCTTGCCACCGG ZGGBP	GAAATGAGGATAGCGCCAAACGGCCGGCCCTTCTTC Pub-3 GAAATGAGGATAGCGCCAAACGGCCGGCCCTTCTTC ZGGBP	ATCATAACACAAAGACAACCTGGGAAGATCCAC Pub-3 ATCATAACACAAAGACTACAACCTGGGAAGATCCAC ZGGBP
1122 T A C C 1481 T A C C	1162 G A T G 1521 G A T G	1202 G A A C 1561 G A A C	1242 A G A T 1601 A G A T	1282 CTAA 1641 CTAA	1322 C G C C 1681 C G C C	62 G G A C	D2 A A C C	442 A A C C 801 A A C C	32 C T G G	NATTG
11	11 15	12	12	1282	1322	1362	1402	1442	1482	1522

Figure 5e

Figure 5f

2 TAATGAGGATCATTTGTCCTACTTCACTTTTATTGGAAGA Pub-3.seq	GTTGCTGGTCTGGCCGTATTTCATGGGAAGCTCTTAGATG GTTGCTGGTCTGGCCGTATTTCATGGGAAGCTCTTAGATG	GTTTCTTCATTAGACCATTTTACAAGATGATGTTGGGAAA Pub-3.	GCAGATAACCCTGAATGACATGGAATCTGTGGATAGTGGCATAGTGCAATCTGTGGATAGTGCAATGACATGGAATCTGTGGATAGTG	TATTACAACTCTTTGAAATGGATCCTGGAGAATGACCCTA TATTACAACTCTTGAAATGGATCCTGGAGAATGACCTA	CTGAGCTGGACCTCATGTTCTGCATAGACGAAGAAACTT CTGAGCTGGACCTCATGTTCTGCATAGACGAAGAAACTT	TGGACAGACATATCAAGTGGATTTGAAGCCCAATGGGTCA Pub-3.	GAAATAATGGTCACAAATGAAAACAAAAGGGAATATATCG Pub-3.	ACTTAGTCATCCAGTGGAGATTTGTGAACAGGTCCAGAA Pub-3.s	GCAGATGAACGCCTTCTTGGAGGGATTCACAGAACTACTT Pub-3.	CCTATTGATTTGATTAAATTTTTGATGAAAATGAGCTGG Pub-
A A	E E E	E E	OOA	TAT	0 H G	0 0	GAA	A A C T	0 U	E E

Figure 5g

111111
CTTTAATCGCCTTGACTTACCTCCATATGAAACCTT CTTTAATCGCCTTGACTTACCTCCATATGAAACCTT GATTTACGAGAAACTTCTCATGGCCGTGGAAAT
CTTTAATCGCCTTGACTTACCTCCATATGAAACCTTTGAA Pub-3. GATTTACGAGAAACTTCTCATGGCCGTGGAAATGCTC Pub-3. GATTTACGAGAGAAACTTCTCATGGCCGTGGAAATGCTC Pub-3. AAGGATTTGAAGGGTGGATTAAGCACCTTGCTCGGG Pub-3. GGTGGTTTTGAAGGGGTGGATTAAGCACCTTGCCTCGGG Rub-3. GGTGGTTTTGAAGGAAAGTTCTGTTGTTGTTGCA RUb-3.6 GGTGGTTGTTCTTCAAGCAAGTTCTGCTTGCACTTTGCA Rub-3.6 GGTGGTTGTTCTTCAAGCAAGTTCTGCTTTTGCA RUb-3.6

Figure 5h

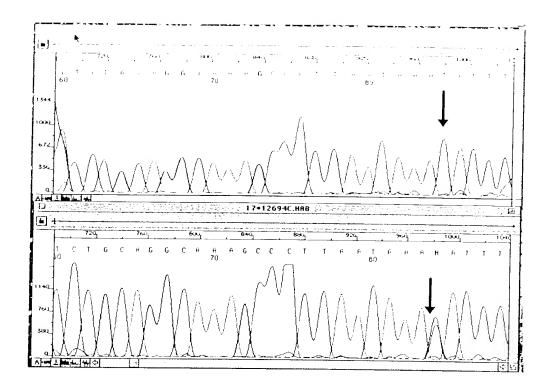
3208
3208
3214 Pub-3.seq 3920 TATTACGTTTTTGGGGTTTTTTGTACAAATTTAG ZGGBP1.seq
3214 Pub-3.seq 3960 CTAATAGCTACAGGCTGAGAATTGTAACATAGCATGAC ZGGBP1.seq
3214 Pub-3.seq 4000 AAATTTTGTGTTGACTTGAAAGGAATCACACCATTATTC ZGGBP1.seq
3214
3214
3214 Pub-3.seq
3214
TAGTC ZGGBP1
- Pub-3. A ZGGBP1
3214
3214

Figure 5i

3214
3214
3214
3214 Pub-3.seq 4480 A C A G A C C T G T C T C A A C T G T T T T G T G A T T T C T C T C A ZGGBP1.seq
3214
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3214

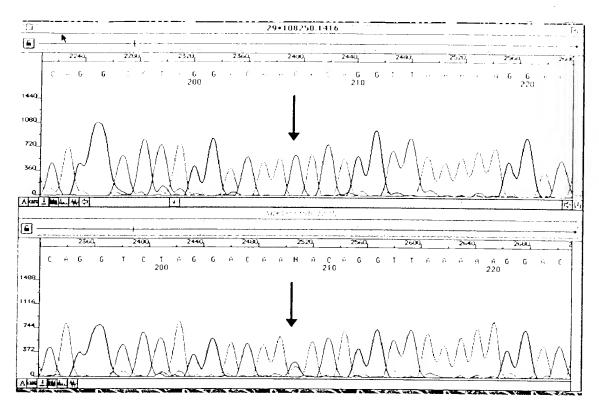
Figure 5j

3214
3214
3214
3220
3220
3220
3220
T A
3226 5120 CCTGGTAGTGATCAGAAACTTAGATGCTATGTAACTC ZGGBP1.seq
Decoration 'Decoration #1': Box residues that match the Consensus exactly.



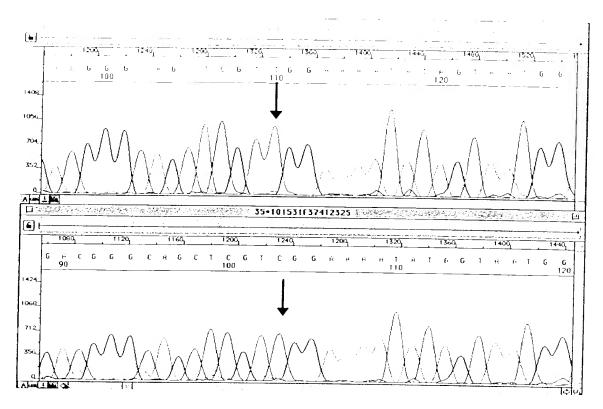
Wild Type (human foetal brain) Variant Type (human adult brain) Polymorphism Position	T/T T/C 355		
		RFLP	

Figure 7



Wild Type (GM1416) C/C Variant (7225) C/G Position 4828 19/21

Figure 8



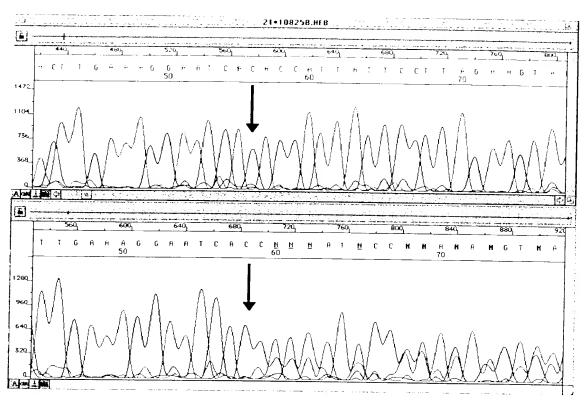
Primer sequences derived from BAC and used on lymphoblastoid cell lines from BPAD Patients.

Homozygous wild type (KK169) - T/T

Homozygous variant (KK232) - C/C

Tetranucleotide repeat underlined

Figure 10



Top electropherogram (human foetal brain) - wild type

Lower electropherogram (7225)

- heterozygous variant

Arrow indicates the position of the C+C insertion - position 4032